UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION III
841 Chestnut Building
Philadelphia, Pennsylvania 19107-4431

MAR 9 1993

Mr. Orlando Monaco
Naval Facilities Engineering Command
Northern Division, Mailstop No. 82
Environmental Contracts Branch
10 Industrial Highway
Lester, Pennsylvania 19113

Re: Naval Air Warfare Center (NAWC) - Warminster, PA

Dear Mr. Monaco:

Please find below EPA comments on a draft Focused Feasiblity Study Report for Operable Unit One dated February 1993.

EXECUTIVE SUMMARY

p. ES-1

PURPOSE

Please revise this section to read:

"The purpose of this FFS is to present remedial alternatives for OU-1, which is defined as any ground water in overburden or shallow bedrock which has been contaminated due to hazardous substance releases by NAWC. The Phase II Remedial Investigation (RI) report for NAWC identifies the known nature and extent of contaminated ground water in overburden and shallow bedrock and an unacceptable risk to human health associated with this ground water. Based on information in the Phase II RI report, it has further been determined that a remedial alternative for OU-1 can be selected at this time. This FFS has been prepared as part of the remedy selection process for OU-1.

Feasibility Studies for other media affected by the facility (including ground water in deep bedrock) shall be performed upon completion of additional RI work. These Feasibility Studies shall be performed to facilitate the selection of additional remedial actions necessary to protect human health and the environment."

REMEDIAL ACTION OBJECTIVES

Please revise this section to read:

"Contaminated ground water in overburden and shallow bedrock, identified as OU-1, presents an unacceptable risk to human health (see Risk Assessment within the Phase II RI report). The general objective of the remedy for OU-1 is to mitigate this risk.

Based on information in the Phase II RI report, there is substantial uncertainty regarding the full nature and extent of (NAWC-related) contaminated ground water in overburden and shallow bedrock and, as a result, uncertainty regarding the ability of any remedy to fully restore the ground water of concern to drinking water quality or other beneficial uses. However, available RI information provides an adequate basis for selecting a remedial alternative to minimize the migration of NAWC-related contaminants in the overburden and shallow bedrock aquifers and to initiate restoration of affected aquifers while further investigations are conducted to fully identify the nature and extent of the contamination and to identify a final remedy.

The remedial objectives for OU-1 are therefore summarized as follows:

- Minimize migration of NAWC-related contaminants in overburden and shallow bedrock ground water
- Initiate restoration of affected aquifers
- Conduct further investigations to fully identify the nature and extent of the NAWC-related contamination in overburden and shallow bedrock ground water and generate the data necessary to select a final remedial action for ground water

A remedy with these objectives is considered an interim remedial action. Alternatives for this interim remedial action are developed in this FFS. A final remedial action for OU-1 shall be selected in the future with the benefit of information generated during the implementation of the selected interim remedial action."

p. ES-2: Remedial Alternatives Development

The text should indicate that CERCLA/NCP require that "No Action" be evaluated as an alternative.

p. ES-3:

Alternative GW-1

The name of the alternative here and elsewhere should be "No Action".

Revise this alternative to read:

"Under this alternative, no Remedial Action would be undertaken at this time to address NAWC-related contaminated ground water in overburden and shallow bedrock. A Remedial Action for ground water would not be selected and implemented until studies necessary to select a final remedial action for ground water are completed. These studies would include Remedial Investigations necessary to fully identify additional contaminated overburden and shallow bedrock ground water, including the source of contaminants in former onsite deep bedrock production wells."

Alternative GW-2

The name of the alternative here and elsewhere should be "Groundwater Extraction, Onsite Treatment and Discharge to Surface Water"

Revise this alternative to read:

"Under this alternative, contaminated overburden and shallow bedrock ground water would be extracted using a series of extraction wells. The extraction wells would be located both on and off current NAWC property to maximize the effectiveness of the system. The extracted ground water would be pumped to an onsite treatment system constructed specifically to treat ground water. Treatment would include air stripping to remove volatile organics and carbon adsorption to remove semi-volatile organics. Emissions from the air stripper would be treated by vapor phase carbon adsorption unless an exemption from air treatment requirements is obtained. Metals would be treated by precipitation and filtration (and ion exchange, or other means, if necessary). Upon meeting effluent limits consistent with NPDES requirements, the treated water would be discharged to an unnamed tributary of Little Neshaminy Creek, an unnamed tributary of Southampton Creek and/or used as a source of water supply. Treatability studies would be performed to confirm effluent levels meet NPDES requirements.

Concurrent with the design, construction and/or operation of the initial extraction well network and treatment system, investigations would be conducted both on and off current NAWC

property as necessary to fully identify the nature and extent of NAWC-related overburden and shallow bedrock ground water contamination. As additional contamination of concern was identified, the extraction well network and treatment system would be modified as necessary to minimize migration of contaminants and initiate aquifer restoration in the newly identified area(s) of concern."

Alternative GW-3

The name of the alternative here and elsewhere should be "Groundwater Extraction, Onsite Pretreatment, Discharge to Warminster or NAWC Wastewater Treatment Plant".

Under this alternative, assume treatment for volatile and semi-volatile organics may be necessary prior to discharge to the Warminster Municipal Authority WWTP or the NAWC Wastewater Treatment Plant (WWTP). If treatability studies indicate such treatment is unnecessary to meet NPDES requirements, these treatment steps need not be included in the final design.

Revise this alternative to read:

"Overburden and shallow bedrock groundwater would be extracted using a series of extraction wells. The extraction wells would be located both on and off NAWC property as necessary to maximize the effectiveness of the extraction system. The extracted ground water would be pumped to an onsite treatment system designed to pretreat ground water prior to discharge to the Warminster Municipal Authority (WMA) WWTP or the NAWC WWTP. Pretreatment would be performed as necessary to meet the influent requirements of the receiving WWTP. Pretreatment may include air stripping to remove volatile organics, precipitation/filtration (and ion exchange or other means, if necessary) to remove metals and/or carbon adsorption to treat semi-volatiles organics. If necessary, emissions from the air stripper would be treated by vapor phase carbon adsorption. After pretreatment, the ground water would be discharged to the WMA WWTP or NAWC WWTP. Treatability studies would be conducted as necessary to confirm the pretreatment meets the requirements of the receiving WWTP and the WWTP meets NPDES requirements."

Insert the latter paragraph of the Alternative GW-2 description here as well.

p.ES-4: Evaluation of Remedial Alternatives

Change estimated costs per all comments in this letter.

1.0 INTRODUCTION

p.1-1: Sec. 1.1

Delete the last two paragraphs in this section and replace with the two paragraphs outlined above for the "Purpose" section in the Executive Summary.

p.1-2: Sec. 1.2

The first sentence should read, "This report presents the remedial alternatives for all NAWC-related ground water contamination in overburden and shallow bedrock, including know contamination in the vicinity of Areas A and B."

The second paragraph (following the bullets) should read: "The Phase II RI report contains a description of the site, regional and site hydrogeology, ground water use, the known nature and extent of overburden and shallow bedrock ground water contamination and a risk assessment for this groundwater."

2.0 IDENTIFICATION AND SCREENING OF TECHNOLOGIES

p. 2-2: Sec. 2.2

Replace the text in this section with the text recommended above for the "Remedial Action Objectives" section of the Executive Summary.

p. 2-2: Sec. 2.2.1

Delete this section.

p. 2-2: Sec. 2.2.2

First sentence should read, "Tables 2-1 and 2-2 present a summary of potential Federal and State ARARs for any remedial actions undertaken for OU-1 of NAWC Warminster."

Delete the rest of the first paragraph.

p.2-3, p.2-6: Tables 2-1 and 2-2

These tables should be entitled "Potential Federal ARARs" and "Potential State ARARs" respectively.

See Attachment A for additional Federal and State ARARs to be included in this table.

p.2-9: Sec.2.2.2.1

First sentence should read, "...ARARs and TBC criteria of potential concern in the case of OU-1."

p.2-10: Table 2-3

See Attachments B and C for corrections to this table.

In addition, note the following:

- Oral RfD for 1,1,1-trichoroethane is 0.035 mg/kg/day and AWQC has been withdrawn
- MCL and MCLG for 1,1-dichloroethene is 7 ug/l
- Cited AWQCs for trichlorofluoromethane, toluene and PAHs are incorrect
- AWQCs for cadmium, chromium, lead, manganese and silver have been withdrawn
- There are no MCLs for aluminum, silver or zinc

  MCL for nickel is final

  MCL for thallium has been finalized at 0.002 mg/l

p.2-21: Table 2-5

As noted in Attachment C, the AWQC for TCE is 2.7 ug/l.

In this table, AWQC are calculated based on a hardness of 115 mg/l, while in Table 3-1, the Maximum Assumed Effluent is calculated based on a hardness of 100 mg/l. Resolve this inconsistency or provide and explanation for the varying assumptions. Reference the technical basis for the final hardness level(s) utilized in the calculations, which should be consistent with the "Hardness Equations" identified at the end of

Attachment 3.

The list of Water Quality Standards per PA Code Title 25, Chapters 93 and 16 appears incomplete. We understand Chapter 16 initially identifies the surface water criteria as policy, while Chapter 93 indicates the same criteria to be "requirements". Contact PADER for PA ARARs.

p.2-30: Sec.2.2.3

This section is repetitive and should be deleted.

p.2-30: Sec.2.2.4

This section should be revised to read:

"Since remedial alternatives being evaluated for OU-1 at this time are for an interim action, certain ARARs may be waived per the discussion in Sec.2.2.2. In the case of OU-1, chemical-specific ARARs for restoration of affected aquifers may be waived temporarily until a final remedial action is selected. However, the objective of the interim action is to initiate the process of restoring affected aquifers toward the chemical-specific ARARs of concern."

p.2-31: Sec.2.3

The last section should read: "...identified for OU-1."

p.2-33: Table 2-7

Under "Screening Comments" for "Capping", replace with the following: "Not applicable: does not meet objective of minimizing migration of contaminated ground water."

p.2-34: Table 2-7

Under "Screening Comments for "Air Sparging", replace with the following: "Not applicable for depth and nature of contamination identified to date."

p.2-43: Sec.2.4.2.5

As noted above, discharge of pre-treated ground water to the WMA WWTP should be considered and retained as an option.

Reuse of treated water for drinking water or industrial purposes should be considered at the screening phase and retained for further consideration unless a basis for elimination is provided.

p.2-45: Sec.2.4.2.5

First full sentence regarding "subsurface reinjection...LDR requirements..." should be deleted.

p.2-48: Sec.2.4.2.6

Conclusion regarding air sparging should read, "Air sparging is not effective in remediating contaminated ground water located significantly below the water table. Since ground water contamination detected to date is significantly below the water table, air sparging is not retained for further consideration at this time."

p.2-61: Table 2-8

Under Surface Water Discharge, third process option should read, "Discharge to NAWC or NWA WWTP."

Also add "discharge" for use as a water supply if appropriate.

3.0 DEVELOPMENT AND SCREENING OF REMEDIAL ALTERNATIVES

p.3-1: Sec. 3.1

First sentence should read, "...based on technologies and process options which passed the final screening outlined in Sec. 2.0."

p.3-1: Sec. 3.1.1

The description of Alternative GW-1 should read as described for the Executive Summary.

p.3-2: Sec.3.1.2

The description should be consistent with comments on this alternative in the Executive Summary and with other comments in this letter.

The third sentence in the first paragraph should be deleted.

The text should indicate that initially, pumping of ground water is projected to be from Areas A and B, and that pumping of shallow bedrock ground water from other areas shall be added during the interim action as necessary based on the results of investigations conducted during the interim action. Similarly, flow rate estimates should be for the initial system.

p.3-3: Sec.3.1.2

The text should note that estimates of the location and depth of extraction wells are developed conceptually in the FS for cost estimation purposes.

p.3-4: Figure 3-1

Since NAWC-related ground water contamination is known to extend beyond the NAWC-property (e.g. at least to the deep Wagner well) and NAWC-related shallow bedrock ground water contamination is certain to extend beyond NAWC-property (e.g. beyond Monitoring Well C located at the NAWC property line), the extraction wells installed as part of the interim action for OU-1 must extend beyond the current NAWC property line to maximize the effectiveness of the extraction well network.

p.3-7, 3-8: Tables 3-1 and 3-2

See comments on Table 2-5.

All streams in PA have been designated by the State as potential sources of drinking water and as cold- or warm-water fisheries. Thus, both the chronic (or continuous concentration) aquatic life criteria and human health criteria apply. The more stringent of the two criteria for a given contaminant would be considered the State standard for NPDES discharge requirements. Application of these standards will require treatment for additional contaminants. Per Superfund guidance, of the Federal and State ARARs, the more stringent level should be selected.

The total concentration of 1,2-dichloroethene is considerably lower than the combined concentrations of cis- and trans-1,2-dichloroethene. Please correct.

Note "effluent standards" for iron and manganese may need to be lower based on treatment system operating conditions.

p.3-10: Sec.3.1.3

The description should be consistent with comments on this alternative in the Executive Summary and with other comments in this letter.

The text notes "the NAWC Warminster WWTP is scheduled to be closed in 1995 when NAWC Warminster will connect to the township sewage treatment plant." On the other hand , the text also notes "it is assumed that the NAWC Warminster WWTP would remain operational for industrial pretreatment use." These statements appear contradictory. According to Mike Hunter of NAWC (per a telecon of 3/4/93), construction has started to connect NAWC sewer lines to the Warminster Municipal Authority system to accomodate a projected flow of 20,000 mgd. Mr. Hunter said the "transfer of function" for NAWC is likely to be complete by March 1996 and that the NAWC WWTP is not likely to be operational by that time. He noted the NAWC WWTP currently handles only 80,000 gals/day and would likely reach the 20,000 mgd flow rate acceptable to the Warminster Municipal Authority well prior to March 1996. Given the above, it appears more reasonable to assume the NAWC WWTP may not be available for use in the future and that Alternative GW-3 should include discharge to the Warminster Municipal Authority system after onsite pretreatment as an option.

4.0 DETAILED ANALYSIS OF ALTERNATIVES

p.4-1

Third paragraph: Delete all but the first sentence, which should read: "Achievement of the remedial action objectives for OU-1 are evaluated under the Overall Protection of Human Health and the Environment Criterion."

p.4-4: "Remedy Selection Process"

Delete this section.

Sec. 4.1: ALTERNATIVE GW-1

p.4-4: Sec.4.1.1

Insert description of GW-1 in the Executive Summary.

In addition, include the paragraph below:

"Additional Remedial Investigation/Feasibility Study activity would be paid for with remedial action funds. Therefore, there would no costs associated with the "No Action" remedial alternative."

p.4-5: Sec.4.1.2

This section should read, "This alternative would delay the implementation of actions necessary to meet the remedial action objectives in this case. Actions would not be taken at this time to minimize the migration of contaminants in overburden and shallow bedrock aquifers and the restoration of these aquifers would not be initiated."

p.4-5: Sec.4.1.3

The first two sentences should be replaced with the following: "This alternative would not initiate the restoration of affected aquifers toward chemical-specific ARARs or minimize the migration of contaminants to prevent additional ground water from exceeding chemical-specific ARARs."

p.4-5: Sec.4.1.4

This section should read: "Delaying remedial action until the completion of Remedial Investigations addressing ground water would result in additional contaminant migration while the studies continue and would likely prolong the period required to restore the aquifers of concern."

p.4-6: Sec.4.1.7

Should read, "Since no remedial action will be taken, this criteria is not applicable."

p.4-6: Sec.4.1.8

Should read, "There are no costs associated with this alternative."

Sec. 4.2: ALTERNATIVE GW-2

p.4-6: Sec.4.2.1

Should be the same as the description in the Executive Summary.

p.4-8: Sec.4.2.2

Should read: "This alternative will minimize the migration of contaminants in the overburden and shallow bedrock aquifers and initiate the restoration of the affected aquifers."

p.4-8: Sec.4.2.3

Should read:

"This alternative would initiate the restoration of affected aquifers to chemical-specific ARARs. However, since the remedy is interim in nature, the requirement to meet chemical-and/or action-specific ARARs for groundwater (e.g. 25 PA Code Chapter 264 requirements) could be waived until a final remedial action was selected.

Treatability studies would be necessary to confirm onsite treatment can meet NPDES requirements for the plant effluent."

p.4-8: Sec.4.2.4

Should read: "This alternative would initiate the process of minimizing the migration of contaminants in the overburden and shallow bedrock aquifers as soon as possible. Initiation of pumping and treatment of groundwater at this time would expedite the generation of data necessary to maximize the efficiency of this system."

p.4-9: Sec.4.2.5

First paragraph should read: "The volume and toxicity of contaminated ground water would be reduced by extraction and

treatment."

p.4-10: Sec.4.2.7

The third paragraph in this section should read, "Investigations to determine the full nature and extent of NAWC-related overburden and shallow bedrock ground water contamination would be part of the Remedial Design/Remedial Action. If these investigations identified additional ground water contamination of concern, additional extraction wells would be installed as part of the interim action for OU-1. The additional flow would be handled either by the initial treatment unit or an additional treatment unit may be installed."

p.4-10: Sec.4.2.8

Estimated costs for vapor phase carbon adsorption on air stripper and additional necessary investigations of overburden and shallow bedrock aquifers should be included in cost estimate. The cost of the investigations should be detailed only to the extent necessary for FS purposes and should include the installation of additional monitoring wells, aquifer tests, water level monitoring during the pumping of extraction wells and ground water sampling.

Sec.4.3: ALTERNATIVE GW-3

p.4-10: Sec.4.3.1

Should be the same as the description in the Executive Summary.

p.4-11: Sec.4.3.2

Should read the same as Sec.4.2.2.

p.4-12: Sec.4.3.3

The first paragraph should be revised to read the same as the first paragraph for Sec.4.2.3.

The second paragraph should read: "Prior to discharge to the WMA or NAWC WWTP, the effluent of the onsite treatment plant must meet the pretreatment requirements of the WWTP. Treatability

studies must be conducted to confirm these requirements are met. The NPDES permit for the receiving facility would likely require modification and treatability studies would be necessary to confirm the effluent of the WWTP meets the requirements of the modified NPDES permit."

p.4-13: Sec.4.3.5

First paragraph should read the same as in 4.2.5.

p.4-13: Sec.4.3.7

The last sentence in the first paragraph should read, "A treatability study would be required to assure onsite pre-treatment met influent requirements of the WMA WWTP or NAWC WWTP and that the NPDES requirements of the receiving WWTP would be met."

As discussed above, it appears unreasonable to assume the NAWC WWTP will remain in operation. Delete the third paragraph.

The fourth paragraph in this section should read the same as the third paragraph in Sec. 4.2.7, but with the following additional sentence at the end of the paragraph: "The increase in flow would not be expected to present a problem with regard to discharge to the receiving WWTP."

p.4-14: Sec.4.3.8

Modify cost estimate per comments above.

p.4-15: Table 4-1

Revise to be consistent with all comments.

5.0 COMPARATIVE ANALYSIS OF ALTERNATIVES

p.5-1: Sec.5.1

This section should read:

"Alternatives GW-2 and GW-3 would both protect human health and the environment by minimizing the migration of groundwater contaminants in the overburden and shallow bedrock aquifers and initiating the restoration of overburden, shallow bedrock and, as a result, deep bedrock aquifers.

Under Alternative GW-1, a remedial action addressing contaminated ground water would not be initiated until studies necessary to select a final remedy for ground water are completed."

p.5-1: Sec. 5.2

This section should read:

"Alternatives GW-2 and GW-3 would initiate the process of restoring affected aquifers to chemical-specific ARARs. However, under these interim remedy alternatives, the requirement to attain chemical-specific ARARs for aquifer restoration could be waived until the completion of additional studies necessary to select a final remedial action for ground water. In the case of both alternatives, ARARs in the form of NPDES requirements would be met for all discharges of treated water.

Alternative GW-1 would not provide the remedial action necessary to initiate restoration of affected aquifers toward chemical-specific ARARs at this time."

p.5-2: Sec.5-3

This section should read:

"By initiating a remedy at this time, Alternatives GW-2 and GW-3 may reduce the time necessary to restore affected aquifers relative to Alternative GW-1 and thus may be more effective over the long-term."

p.5-2: Sec.5.6

First sentence should read: "No remedial action is included under Alternative GW-1."

The third paragraph should be replaced with the following:

"Under Alternative GW-2, it is assumed that extracted groundwater can be treated onsite to meet effluent limits for discharge to a tributary to Little Neshaminy Creek or Southampton Creek.

Under Alternative GW-3, the ground water would pre-treated onsite prior to discharge to either the NAWC WWTP or a local POTW. In each case, it is assumed that the ground water will treated to the extent necessary to meet pretreatment requirements and that the WMA or NAWC WWTP can subsequently meet their NPDES requirements. At this time, it is unknown how long the NAWC WWTP

will remain operational or whether the WMA WWTP would accept pretreated ground water from NAWC."

p.5-3: Sec.5.7

Adjust costs per comments above.

Should you have any comments or questions regarding the comments above, please give me a call at 215-597-0549.

Sincerely,

Darius Ostrauskas
Remedial Project Manager

cc: Frank Kurdziel, NAWC
Ben Mykijewycz
David Kennedy, PADER
Craig Olewiler, PADER